

## FULL ABSTRACT

Effect of Germinated-soy Milk on Antioxidant and Immune Status of Lactating Mothers

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The current study the germinated-soy enriched milk was expected to improve health status of lactating mothers that were shown by their high level of antioxidant and immune status in their bloods' plasma and breast milk. This experimental research used a design of Randomized Controlled Trial, double blind that was rolled by 52 lactating mothers. The criteria for respondent were 20-35 years age, having a newborn up to 6 months old baby, healthy, living in Purwokerto area, and agreed to sign informed consent. Subjects were divided randomly into two groups: group I was given germinated-soy enriched milk, while II was given a placebo for 2 consecutive months in their daily diet. Blood and breast milk samples were taken three times, namely at baseline, followed by 1 and 2 months after intervention. Plasma and skim milk fraction samples obtained was used as a sample test. Sample tested including the activity of SOD, Catalase, and GSH-PX enzymes, and MDA, IL-6, and C-RP levels. Data were analyzed by one way analysis of variance with repeated measures and by paired samples of t-test. Differences between means were considered significant at  $p < 0.05$ . The result showed that there was an increase in SOD plasma activity of 202.17 to 336.42 % ( $P = 0.043$ ), catalase from 82.07 to 106.54 mU/ml ( $P = 0.005$ ), and GSH - PX of 137.43 to 143.06 ng/mL ( $P = 0.038$ ). Instead, there was a decrease in the levels of MDA 27.56 to 12.66  $\mu$ M ( $P = 9.65E-06$ ), IL-6 of 10.2 to 1.78 pg/mL ( $P = 0.02$ ), and CRP from 9.35 to 2.38 mg/mL ( $P = 0.0015$ ). In breast milk, there were also an increase in the activity of SOD from 360.42 to 699.31% ( $P = 0.56$ ), catalase from 34.58 to 56.26 mU/ml ( $P = 0.019$ ), GSH - PX from 43.40 to 60.99 ng/ml ( $P = 0.049$ ). The decline also occurred in MDA levels of 62.01 to 48.85  $\mu$ M ( $P = 0.048$ ), IL-6 from 4.89 to 1.56 pg/mL ( $P = 0.44$ ), and CRP from 0.099 into 0.046 mg/L ( $P = 0.77$ ). There were unexpected findings, BMI decreased from 22.77+0.56 to 20.64+0.49 kg/m<sup>2</sup> ( $P = 0.006$ ) in the intervention group germinated-soy milk. In conclusion, germinated-soy milk could improve antioxidant status and the immune status of lactating mothers. Germinated-soy based product allows to develop as a healthy-diet products, considering its potential to losing weight in a short time.

Keywords: germinated-soy-enriched-milk, antioxidant and immune status, lactating-mothers